

REMARKS

Claims 1-17 and 19-34 remain pending herein.

1. Claims 12 and 15 were rejected under §112, second paragraph. Applicants submit that the amendments herein to the present claims attend to this rejection. Accordingly, withdrawal thereof is respectfully requested.

2. Claims 1-22 were rejected under §103 over Wei, et al. alone, or in view of Abrahamson and Christianson. This rejection is respectfully traversed for the following reasons.

The claimed invention is drawn to an engineered coated abrasive product that includes a substrate and an abrasive layer overlying the substrate. Claim 1 has been amended herein to clarify that the abrasive product is engineered, that is, is product in which the abrasive layer has a raised pattern of surface features. Further, the abrasive layer includes first and second binder components and abrasive grains, the first binder component being radiation curable, and the second binder component being thermally curable. Of particular significance, the thermally curable binder component is comprised of a powder. Applicants have discovered that in the particular context of engineered coated abrasive products, utilization of a thermally curable binder component in powder form results in a superior abrasive product. In this respect, the attention of the PTO is drawn to the Examples provided in the present specification.

As described in detail, Example 1 compares a control formulation against an embodiment of the claimed invention that includes a thermally curable binder component provided in powder form. As reported, Example 1 shows notably superior performance over the control formulation, including improved cut/wear ratios as reported in Table 2. Further, Example 2 compares control formulations against embodiments of the claimed invention that incorporate thermally curable powder as the second binder component. As reported in Table 7, embodiments incorporating thermally curable powder demonstrate notably superior G-ratio, defined as the ratio of stock removal to product weight loss, and notably superior post-machining gloss, a particularly important performance criterion for various applications of the abrasive product.

Applicants acknowledge the statements in the Office Action by the PTO that the powder form of the second binder component is essentially a product-by-process feature, in that the powder generally does not remain in the finally formed abrasive product. However, Applicants have discovered that utilization of the powder during the forming process in connection with the thermally curable second binder component nevertheless results in notably superior performance parameters and should be given patentable weight in the context of the present article claims.

Turning to the prior art, the primary reference relied upon by the PTO, Wei et al. (US 5,833,724), is the state of the art over which the claimed invention was developed. The primary reference is co-owned by the present Assignee and shares common inventors, and was addressed in the background of the present specification, paragraphs 6-7. While Wei et al. disclose a combination of binder components, Wei et al. fail to teach (or suggest) particularly utilizing a powder form thermally curable binder in powder form. Indeed, Applicants confirm that the radiation curable binder utilized in Wei et al. is in liquid form.

Turning to the secondary references, Applicants acknowledge the existence of thermally curable binders in powder form, and further, use of such powders in the context of abrasive components. Abrahamson is representative of such use of thermally curable powders, but is limited to teaching of thermally curable powders in the context of a bonded abrasive rather than a coated abrasive. Again, Applicants have discovered notable improvements in the context of coated abrasives, particularly engineered coated abrasives. Applicants also submit that the art as a whole does not teach or recognize the particular significance powdered thermally curable binder in the context of the invention as claimed.

For at least the foregoing reasons, Applicants respectfully submit that the presently claimed invention would not have been obvious over Wei et al. in view of the secondary references. Accordingly, reconsideration and withdrawal of the §103 rejection is respectfully requested.

Applicants respectfully submit that the present application is now in condition for allowance. Accordingly, the Examiner is requested to issue a Notice of Allowance for all pending claims.

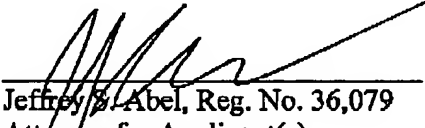
Should the Examiner deem that any further action by the Applicants would be desirable for placing this application in even better condition for issue, the Examiner is requested to contact Applicants' undersigned attorney at the number listed below.

Applicants do not believe that any additional fees are due, but if the Commissioner believes additional fees are due, the Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-2469.

Respectfully submitted,

Date

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Jeffrey S. Abel, Reg. No. 36,079
Attorney for Applicant(s)
TOLER, LARSON & ABEL, L.L.P.
5000 Plaza On The Lake, Suite 265
Austin, Texas 78746
(512) 327-5515 (phone)
(512) 327-5452 (fax)